IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Harry Tiotantra et al.	Appeal No. _____
Serial No.:	10/826,021	
Filed :	April 16, 2004	Group Art Unit: 2115
For :	DATA STREAMING SYSTEM WITH ENVIRONMENTAL SENSOR	Examiner: Albert C. Wang
Docket No.:	S104.12-0088/STL 11607.00	

BRIEF FOR APPELLANT

FILED ELECTRONICALLY ON NOVEMBER 26, 2007

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from a final rejection of the claims in an Office Action dated February 20, 2007, and a pre-appeal review decision dated October 25, 2007.

REAL PARTY IN INTEREST

Seagate Technology LLC, a Delaware limited liability company, having offices at 920 Disc Drive, Scotts Valley, CA 95066, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefore, as set forth in the Assignment filed with the Patent Application and recorded on Reel 015231 /Frame 0235.

RELATED APPEALS AND INTERFERENCES

Applicants are aware of no related appeals or interferences, other than an earlier-filed pre-appeal review.

STATUS OF THE CLAIMS

Claims	Status
None	Withdrawn
None	Canceled
1-27	Rejected
None	Allowed

STATUS OF AMENDMENTS

There were no amendments filed subsequent to the final rejection being appealed.

SUMMARY OF CLAIMED SUBJECT MATTER

I. SUMMARY OF CLAIMED SUBJECT MATTER

A. Background

As described in the instant specification and FIGS. 2-3 (below), the present invention relates to data streaming systems (200) which use data storage devices (202). The data storage device (202) provides an intermittent read data stream (204), and an environment sensor (206) provides an output (208) which is used to generate a "time-to-fill estimate" (212 in FIG. 2, 324 in FIG. 3) of the present application. The time-to-fill estimate (212 in FIG. 2, 324 in FIG. 3) is related to a maximum rate at which the data storage device is capable of delivering data under current environmental predictions (page 4, lines 26-28).

As illustrated in FIG. 3 and discussed in the section beginning at the bottom of page 6 of the instant specification, a comparator (230) is used to control energization of the data storage device (202) when a time-to-exhaust estimate (326) drops down to the same level as the time-to-fill estimate (324) which is illustrated at a crossover point (330) in FIG. 3. At the time of this crossover point (330), the comparator causes the data storage device 202 to be energized (at 332).

The time-to-fill estimate (324) is a variable that is controlled by current environmental conditions which can affect the time-to-fill estimate (324). As illustrated by the example in FIG. 3, the variable time-to-fill estimate (324) varies due to vibration changes between a user resting (310, 312) or jogging (314).

B. FIGS. 2-3.

FIGS. 2-3 of the instant disclosure are reproduced below for convenient reference.

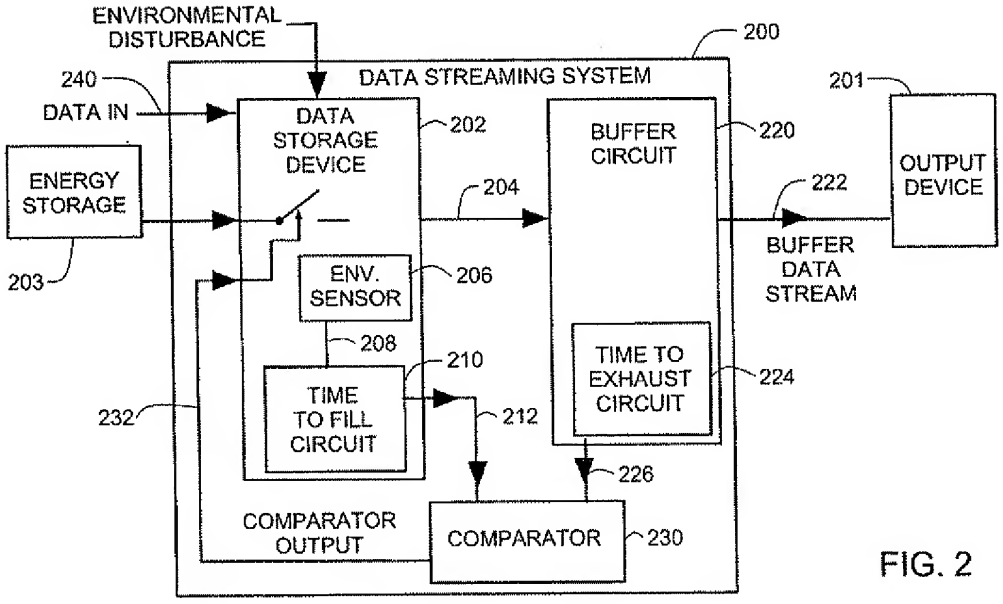

ENVIRONMENTAL DISTURBANCE
200
DATA STREAMING SYSTEM
240
DATA IN
DATA STORAGE DEVICE
202
BUFFER CIRCUIT
220
201
OUTPUT DEVICE
ENERGY STORAGE
204
222
BUFFER DATA STREAM
203
ENV. SENSOR
206
208
210
TIME TO FILL CIRCUIT
TIME TO EXHAUST CIRCUIT
224
232
212
226
COMPARATOR OUTPUT
COMPARATOR
230

FIG. 2

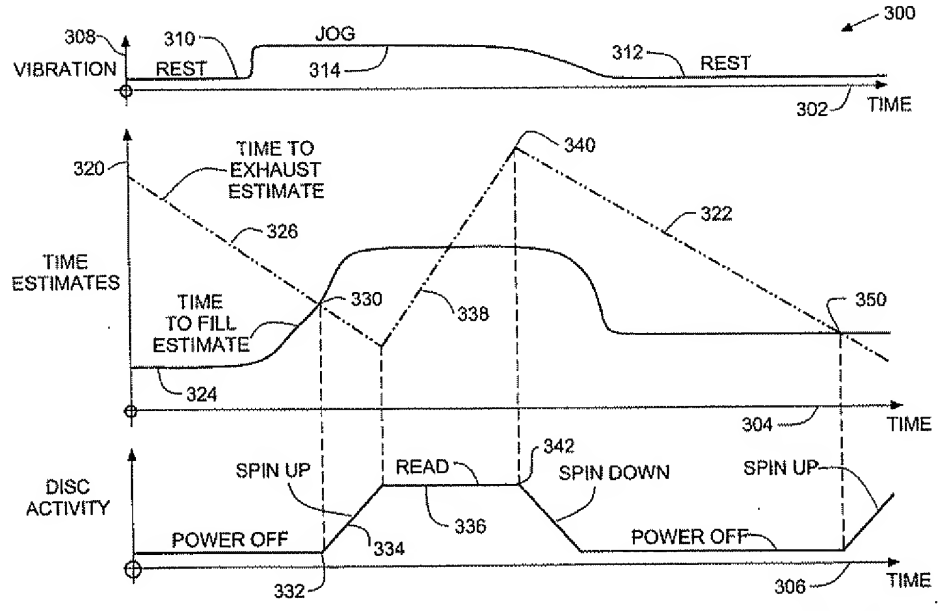

300
308
VIBRATION
310
REST
JOG
314
312
REST
302
TIME
320
TIME TO EXHAUST ESTIMATE
340
322
326
TIME ESTIMATES
TIME TO FILL ESTIMATE
330
338
350
324
304
TIME
342
SPIN UP
READ
SPIN DOWN
SPIN UP
DISC ACTIVITY
POWER OFF
334
336
POWER OFF
332
306
TIME

FIG. 3

C. Independent Claim 1

Claim 1 is directed to a data streaming system (data streaming system 200, FIG. 2). The data streaming system includes a data storage device (202), a data streaming buffer (220) and a comparator (230).

The data storage device (202) provides an intermittent read data stream (204). The data storage device (202) also includes an environment sensor (206). The data storage device (202) generates a variable time-to-fill estimate (212) as a function of a sensor output (208). As illustrated in FIG. 3, the time-to-fill estimate (324) is variable.

The data streaming buffer circuit (220) receives the intermittent read data stream (204), provides a buffer data stream (222), and generates a time-to-exhaust estimate (226).

The comparator (230) receives the time-to-fill estimate (212) and the time-to-exhaust estimate (226). The comparator (230) generates a comparator output (232) that couples to the data storage device (202) to control energization (e.g., controlled switch in the data storage device 202 and FIG. 3 "disc activity" switching between "power off" and "read") of the data storage device (202).

D. Independent Claim 15

Claim 15 is directed to a method of data streaming (FIGS. 2, 3). An intermittent read data stream (204) couples from a data storage device (202) to a data streaming buffer circuit (220) that provides a buffer data stream (222). A buffer time-to-exhaust estimate (226, 326) and a variable time-to-fill estimate (212, 324), that is a function of an environmental sensor output (208), couple to a comparator (230). A comparator output (232) couples to the data storage device (202) and controls energization (e.g., controlled switch in the data storage device 202 and FIG. 3 "disc activity" switching between "power off" and "read") of the data storage device (202). As illustrated in FIG. 3, the time-to-fill estimate (324) is variable.

E. Independent Claim 24

Claim 24 is directed to a data streaming system (data streaming system 200, FIG. 2). The data streaming system includes a data storage device (202), a data streaming buffer (220) and comparator means (230).

The data storage device (202) provides an intermittent read data stream (204). The data storage device (202) also includes an environment sensor (206). The data storage device (202) generates a variable time-to-fill estimate (212) as a function of a sensor output (208). As illustrated in FIG. 3, the time-to-fill estimate (324) is variable.

The data streaming buffer circuit (220) receives the intermittent read data stream (204), provides a buffer data stream (222), and generates a time-to-exhaust estimate (226).

The comparator means (230) receives the time-to-fill estimate (212) and the time-to-exhaust estimate (226). The comparator (230) generates a comparator output (232) that couples to the data storage device (202) to control energization (e.g., controlled switch in the data storage device 202 and FIG. 3 "disc activity" switching between "power off" and "read") of the data storage device (202).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Rejection of Claims 1-27 under 35 USC 103(a) based on Hodge et al. U.S. Pub. No. 2004/0252397 in view of Millikan et al. U.S. Patent No. 6,928,039.

ARGUMENT

I. The rejections of claims 1-27 under 35 USC 103(a) each fail to establish a prima facie case of obviousness.

A. In order to establish a prima facie case of obviousness by combining prior art elements from multiple references, the Examiner must make a finding that " the prior art included each element claimed, although not necessarily in a single prior art reference." Examination Guidelines for Determining Obviousness Under 35 USC 103 in View of the Supreme Court

Decision in KSR International Co. v. Teleflex Inc., Federal Register, Volume 72, Number 195, Wednesday, October 10, 2007, 57526 at 57529.

B. The grounds of rejection stated by the Examiner set forth a purported combination of prior art elements from multiple references.

In rejecting each of independent Claims 1, 15, 24, the Examiner stated the ground for rejection as "At the time of the invention, it would have been to one of ordinary skill in the art to apply Millikan's comparing to Hodge's data streaming system, as time-to-fill and time-to-exhaust values are inherently related when buffer underflow will occur. (Final Office Action of February 20, 2007, page 3, lines 2-4; page 4, bottom three lines; page 6, lines 13-15). These stated grounds for rejection are a purported combination of prior art elements from Millikan and Hodge.

C. Each of the claims includes an element (a time-to-fill estimate) that is not taught or suggested in either Millikan or Hodge.

1. Independent Claim limitations. Independent Claim 1 includes limitations to "a comparator receiving the time-to-fill and time-to-exhaust estimates and generating a comparator output that couples to the data storage device to control energization of the data storage device." Independent Claim 15 includes limitations to "coupling a variable time-to-fill estimate ..., and a buffer time-to-exhaust estimate to a comparator; and controlling energization of the data storage device by generating a comparator output that couples to the data storage device." Independent Claim 24 includes limitations to "comparator means for receiving the time-to-fill estimate and a time-to-exhaust estimate and for controlling energization of the data storage device.

2. The Hodge reference. The primary reference Hodge discloses a disc drive in which disc drive access is deferred when vibration is senses. Hodge does not teach or suggest "control of energization of a data storage device" as presently claimed in Claims 1, 15 and 24. Hodge also does not teach or suggest a "time-to-fill estimate" as presently claimed in claims 1, 15, and 24. Hodge also does not teach or suggest a "time-to-exhaust estimate" as presently claimed in Claims 1, 15, and 25. Hodge also does not teach or suggest "a comparator (or comparator means)" that control energization as presently claimed in claims 1, 15 and 24. As pointed out in the Final Office Action, "Hodge does not expressly teach the details of deciding when a buffer refresh, and

the corresponding energization of the data storage device, should occur." Final Office Action of February 20, 2007, Page 2, last 3 lines.

3. The Millikan reference. The Millikan reference teaches a compact disc player that includes a local memory (Millikan, col. 2, line 1). "As compressed audio is written to and read from the local memory, the CD player maintains a count of the amount of data in local memory. On the basis of this count and the bit rate of the compressed audio, the CD player calculates a cached audio playback time. If the cached audio playback time is longer than the restart time of the CD player, the CD player can be placed in a reduced power state." (Millikan, col. 2, lines 2-9.) "The restart time of the CD player is a predefined time that is at least as long as the time required to power the CD player and play audio from a time when the CD player is in a reduced power state." (Millikan, col. 2, lines 13-16).

Millikan does not teach or suggest a "time-to-fill estimate" as presently claimed in claims 1, 15, and 24. Millikan also does not teach or suggest "a comparator (or comparator means)" that receives a time-to-fill estimate and a time-to-exhaust estimate for control of energization as presently claimed in claims 1, 15 and 24.

Millikan discloses that a CD server 29 calculates the "cached audio playback time" (Millikan, col. 3, line 67). Millikan's "cached audio playback time" is similar to the claimed "time-to-exhaust" estimate as presently claimed. However, Millikan teaches that "the CD player can be put in a reduced power state if the cached data playback time is greater than the CD player restart time. (Millikan, col. 4, lines 17-19). Millikan, however, does not teach or suggest comparing the "cached audio playback time" to a time-to-fill estimate. The mention of a time-to-fill estimate is completely absent from Millikan. The "CD player restart time" in Millikan is not the same thing as a time-to-fill estimate in Claims 1, 15 and 24. The time-to-fill estimate is a variable that is based on an environment sensor, while the "CD player restart time" is not taught to be a variable.

4. Dependent Claims. The dependent claims 2-14, 16-23 and 25-27 include limitations that, when taken in combination with the independent claims are also non-obvious.

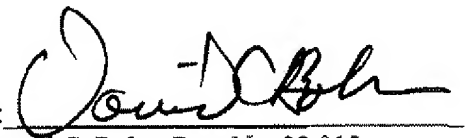
As the cited references do not teach or suggest all of the elements of the claims 1-27, it is

believed that the present application is in condition for allowance. Consideration and favorable action are respectfully requested.

CONCLUSION

Applicants respectfully request that the Board reverse the Examiner and find that claims 1-27 are in condition for allowance.

WESTMAN, CHAMPLIN & KELLY, P.A.

By: 

David C. Bohn, Reg. No. 32,015
Suite 1400 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

DCB:

CLAIMS APPENDIX

1. (previously presented) A data streaming system, comprising:

a data storage device providing an intermittent read data stream; the data storage device also including an environment sensor and generating a variable time-to-fill estimate as a function of a sensor output;

a data streaming buffer circuit receiving the intermittent read data stream, providing a buffer data stream, and generating a time-to-exhaust estimate; and

a comparator receiving the time-to-fill and time-to-exhaust estimates and generating a comparator output that couples to the data storage device to control energization of the data storage device.

2. (previously presented) The data streaming system of Claim 1 wherein the control of the energization prevents exhausting of data stored in the data streaming buffer circuit.

3. (previously presented) The data streaming system of Claim 1 wherein the intermittent read data stream has a first data transmission rate, and the buffer data stream has a second data transmission rate that is slower than the first data transmission rate.

4. (previously presented)The data streaming system of Claim 1 wherein the intermittent read data stream refills the data streaming buffer circuit before the data streaming buffer circuit is depleted of data, so that the buffer data stream is a continuous data stream.

5. (original) The data streaming system of Claim 1 wherein the energization cycles on and off to reduce energy consumption in the data streaming system.

6. (original) The data streaming system of Claim 1 wherein the buffer data stream has a bit rate that is controllable by a command received from an output device.

7. (original)The data streaming device of Claim 1 wherein the data storage device further comprises a data streaming rate estimate output that is couplable to an output device.

8. (original) The data streaming device of Claim 1 wherein the environmental sensor comprises an acceleration sensor.

9. (original) The data streaming device of Claim 1 wherein the environmental sensor comprises a loss-of-read-channel-data sensor.

10. (original) The data streaming device of Claim 1 wherein the environmental sensor comprises a humidity sensor.

11. (original) The data streaming device of Claim 1 wherein the environmental sensor comprises a temperature sensor.

12. (original) The data streaming device of Claim 1 wherein the environmental sensor comprises a low battery sensor.

13. (original) The data streaming device of Claim 1 wherein the data storage device comprises a hard disc drive.

14. (original) The data streaming device of Claim 1 wherein the data storage device is mounted in a portable device subject to environmental shock.

15. (previously presented) A method of data streaming, comprising:

coupling an intermittent read data stream from a data storage device to a data streaming buffer circuit that provides a buffer data stream;

coupling a variable time-to-fill estimate that is a function of an environmental sensor output, and a buffer time-to-exhaust estimate to a comparator; and

controlling energization of the data storage device by generating a comparator output that couples to the data storage device.

16. (previously presented) The method of Claim 15 further comprising:

preventing exhaustion of the data streaming buffer circuit by the controlling of energization.

17. (previously presented) The method of Claim 15 further comprising:

transmitting data from the data storage device at a faster rate than transmission of data from the data streaming buffer circuit.

18. (previously presented) The method of Claim 15 further comprising:

refilling the data streaming buffer circuit with data from the intermittent read data stream before the data streaming buffer circuit is depleted of data.

19. (original) The method of Claim 15 further comprising:

reducing energy consumption in the data storage device by cycling the energization on and off.

20. (original) The method of Claim 15 further comprising:

controlling a bit rate of the buffer data stream by an output device.

21. (original) The method of Claim 15 further comprising:

the environmental sensor sensing an environmental variable selected from the group: acceleration, loss-of-read-channel-signal, humidity, temperature, low battery.

22. (original) The method of Claim 15 further comprising:

coupling a data streaming rate estimate output from the data storage device to an output device.

23. (original) The method of Claim 15 further comprising:

mounting the data storage device in a portable device subject to environmental shock.

24. (previously presented) A data streaming system, comprising:

a data storage device providing an intermittent read data stream; the data storage device also including an environment sensor and generating a variable time-to-fill estimate as a function of a sensor output;

a data streaming buffer circuit receiving the intermittent read data stream, providing a buffer data stream; and

comparator means for receiving the time-to-fill estimate and a time-to-exhaust estimate and for controlling energization of the data storage device.

25. (previously presented) The data streaming system of Claim 24 wherein the controlling of energization prevents exhausting the data streaming buffer circuit.

26. (original) The data streaming system of Claim 24 wherein the controlling of energization reduces energy consumption on the data streaming system.

27. (original) The data streaming device of Claim 24 wherein the environmental sensor senses acceleration.

EVIDENCE APPENDIX

Examination Guidelines for Determining Obviousness Under 35 USC 103 in View of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., Federal Register, Volume 72, Number 195, Wednesday, October 10, 2007, 57526 at 57529.

RELATED PROCEDINGS APPENDIX

There are no known related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this Appeal.